

Virginia Science

# Grade 3

Adopted 2018

## Scientific and Engineering Practices

- 1. The student will demonstrate an understanding of scientific and engineering practices by 3.1**
    - a. asking questions and defining problems 3.1.A
      - i. ask questions that can be investigated and predict reasonable outcomes 3.1.A.I
      - ii. ask questions about what would happen if a variable is changed 3.1.A.II
      - iii. define a simple design problem that can be solved through the development of an object, tool, process, or system 3.1.A.III
    - b. planning and carrying out investigations 3.1.B
      - i. with guidance, plan and conduct investigations 3.1.B.I
      - ii. use appropriate methods and/or tools for collecting data 3.1.B.II
      - iii. estimate length, mass, volume, and temperature 3.1.B.III
      - iv. measure length, mass, volume, and temperature in metric and U.S. Customary units using proper tools 3.1.B.IV
      - v. measure elapsed time 3.1.B.V
      - vi. use tools and/or materials to design and/or build a device that solves a specific problem 3.1.B.VI
    - c. interpreting, analyzing, and evaluating data 3.1.C
      - i. organize and represent data in pictographs or bar graphs 3.1.C.I
      - ii. read, interpret, and analyze data represented in pictographs and bar graphs 3.1.C.II
      - iii. analyze data from tests of an object or tool to determine if it works as intended 3.1.C.III
    - d. constructing and critiquing conclusions and explanations 3.1.D
      - i. use evidence (measurements, observations, patterns) to construct or support an explanation 3.1.D.I
      - ii. generate and/or compare multiple solutions to a problem 3.1.D.II
      - iii. describe how scientific ideas apply to design solutions 3.1.D.III
    - e. developing and using models 3.1.E
      - i. use models to demonstrate simple phenomena and natural processes 3.1.E.I
      - ii. develop a model (e.g., diagram or simple physical prototype) to illustrate a proposed object, tool, or process 3.1.E.II
    - f. obtaining, evaluating, and communicating information 3.1.F
      - i. read and comprehend reading-level appropriate texts and/or other reliable media 3.1.F.I
      - ii. communicate scientific information, design ideas, and/or solutions with others 3.1.F.II
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## Force, Motion, and Energy

- 2. The student will investigate and understand that the direction and size of force affects the motion of an object. Key ideas include** 3.2
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- a. multiple forces may act on an object;** 3.2.A
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- b. the net force on an object determines how an object moves;** 3.2.B
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- c. simple machines increase or change the direction of a force; and** 3.2.C
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- d. simple and compound machines have many applications.** 3.2.D
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## Matter

- 3. The student will investigate and understand how materials interact with water. Key ideas include** 3.3
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- a. solids and liquids mix with water in different ways; and** 3.3.A
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- b. many solids dissolve more easily in hot water than in cold water.** 3.3.B
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## Living Systems and Processes

- 4. The student will investigate and understand that adaptations allow organisms to satisfy life needs and respond to the environment. Key ideas include** 3.4
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- a. populations may adapt over time;** 3.4.A
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- b. adaptations may be behavioral or physical; and** 3.4.B
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- c. fossils provide evidence about the types of organisms that lived long ago as well as the nature of their environments.** 3.4.C
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- 5. The student will investigate and understand that aquatic and terrestrial ecosystems support a diversity of organisms. Key ideas include** 3.5
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- a. ecosystems are made of living and nonliving components of the environment; and** 3.5.A
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- b. relationships exist among organisms in an ecosystem.** 3.5.B
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## Earth and Space Systems

- 6. The student will investigate and understand that soil is important in ecosystems. Key ideas include** 3.6
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- a. soil, with its different components, is important to organisms; and** 3.6.A
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- b. soil provides support and nutrients necessary for plant growth.** 3.6.B
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- 7. The student will investigate and understand that there is a water cycle and water is important to life on Earth. Key ideas include** 3.7
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- a. there are many reservoirs of water on Earth;** 3.7.A
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- b. the energy from the sun drives the water cycle; and** 3.7.B
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**c. the water cycle involves specific processes. 3.7.C**

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**Earth Resources**

**8. The student will investigate and understand that natural events and humans influence ecosystems. Key ideas include 3.8**

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**a. human activity affects the quality of air, water, and habitats; 3.8.A**

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**b. water is limited and needs to be conserved; 3.8.B**

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**c. fire, flood, disease, and erosion affect ecosystems; and 3.8.C**

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**d. soil is a natural resource and should be conserved. 3.8.D**

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